**Training Adaptations Quiz answers**

**1. a. Subject A - Trained**

**b. Subject B**

**Subject B has a lower stroke volume and less efficient cardiorespiratory system than Subject A . Subject**

**B’s heart has to beat more rapidly to provide sufficient 02.**

**c. Subject A - lower resting heart rate - heart rate increases slowly during activity and does not reach**

**maximum levels.**

**Subject B - higher resting heart rate - heart rate increases more rapidly and reaches near maximal levels**

**during the activity.**

**Subject A has a higher V02 max and is working at a lower percentage of their V02 max than subject B.**

**Subject A has a more efficient cardiorespiratory system than subject B, enabling them to supply and use 02**

**more efficiently - heart does not have to work as hard to meet exercise demands.**

**2. Stroke volume increases at the onset of exercise then levels off once maximum stroke volume is attained.**

**Following this cardiac output increases as a result of elevated heart rate.**

**3. a. Blood volume increases.**

**Haemoglobin levels increase.**

**b. Increase the capacity of the athlete to transport 02 to working muscles.**

**4. • increase in size and number of mitochondria**

**• increased myoglobin concentration**

**• increase oxidative capacity of both glucose and fat**

**5. a. - increased blood volume and haemoglobin concentration allows subject A to transport higher levels of 02 to**

**working muscles**

**- increased capillary density - improves supply and absorption of 02.**

**- increase in size and number of mitochondria - increases capacity to produce energy aerobically**

**b. Increased stroke volume induced by training.**

**6.**

**7. a. Subject C**

**b. Increased ventricular wall thickness will result in a small increase in stroke volume.**

**More pronounced increase in stroke volume is experienced by endurance athletes whose ventricular cavity**

**increases due to training.**

**8. • muscle hypertrophy**

**• increased ability to recruit motor units**

**• increased ATP/CP splitting**

**• increased contractile proteins in muscles**